

November 11, 6 a. m., 121° 15' longitude E., 11° 25' latitude N.
 November 12, 6 a. m., 118° 10' longitude E., 11° 35' latitude N.
 November 13, 6 a. m., 115° 50' longitude E., 12° 20' latitude N.
 November 14, 6 a. m., 113° 40' longitude E., 13° 10' latitude N.
 November 15, 6 a. m., 110° 40' longitude E., 14° 20' latitude N.

The other Pacific typhoon was shown in our weather maps of the 20th as forming to the south of Guam not far from 145° longitude E. and 9° latitude N. It moved northwestward until the 23d when it recurved to NNE. to the west of the southern part of the Ladrone Islands. The steamer *Ramapo* was involved in this typhoon near to the west of the Ladrone Islands with a falling barometer and strong winds and squalls from the southeast quadrant.

The approximate positions of the center of this typhoon at 6 a. m. of November 21 to 27 were:

November 21, 6 a. m., 144° 10' longitude E., 9° 30' latitude N.
 November 22, 6 a. m., 141° 00' longitude E., 11° 50' latitude N.
 November 23, 6 a. m., 139° 10' longitude E., 14° 30' latitude N.
 November 24, 6 a. m., 140° 20' longitude E., 17° 10' latitude N.
 November 25, 6 a. m., 140° 55' longitude E., 18° 00' latitude N.
 November 26, 6 a. m., 142° 50' longitude E., 21° 05' latitude N.
 November 27, 6 a. m., 149° 30' longitude E., 28° 25' latitude N.

551.5/5 (461.1)

THE FIJI HURRICANE OF DECEMBER, 1929

By WILLIS E. HURD

From the 7th to the 14th of December, 1929, a hurricane raged over and in the general vicinity of the Fiji Islands. Our present knowledge of this intense storm rests largely upon the facts contained in a series of reports submitted to the Weather Bureau by Mr. J. H. Berendsen, second officer of the American steamship *Golden Rod*, en route from Sydney, New South Wales, toward the Hawaiian Islands and San Francisco, via the Fijis. In addition to his own experiences, Mr. Berendsen kindly furnished radio messages received from other vessels and from Fijian and other land stations, including copies of hurricane warnings and advices transmitted from Suva.

The only additional report of the storm received was that of the British steamship *Waitemata*, Captain Jannay, Observer McCarry, Westport, New Zealand, to Vancouver. This vessel at midnight of the 10th, while at some distance south of the cyclone center, ran into whole southeasterly gales which persisted with incessant rain until 3 p. m. of the 11th when, to use the words of the observer, "the wind shifted to NE., reaching hurricane force, the ship being hove to in lat. 21° 45' S., long. 178° W., lowest barometer 29.26. About 2 a. m. of the 12th the wind shifted to ENE. and remained there throughout the day, the gale gradually decreasing in force."

The *Golden Rod* entered the extreme forward rim of the storm zone—which was many hundreds of miles in extent—with a southeasterly gale of force 7, near lat. 22° 23' S., long. 172° 39' E., on the afternoon of the 10th. Thence, though at no time close to the actual hurricane center, she had mostly rough seas and strong winds to strong or whole gales until she entered harbor on the 14th, at which time the storm had passed her and was central approximately 300 to 350 miles to the southward and was moving in the general direction of Norfolk Island.

The initial appearance of the storm, as gathered from the reports of the *Golden Rod*, seems to have been near the tenth parallel of south latitude to the southeastward of the Ellice Islands, although a radio message of Monday, December 8, leads one to the suspicion that it may have originated a few days earlier considerably to the north-eastward of the Ellice Group. Quoting this message:

The *Norwich City* went on reef and broke up last week at Garden Island in Phoenix Group. Eleven persons were drowned. The steamer *Lincoln Ellsworth* has 12 survivors aboard; the rest were picked up by some British steamer.

During its early days the cyclone was evidently traveling in a southwesterly direction, and on the 9th lay north or somewhat to the northwest of the Fijis. A report from the Norwegian steamship *Tyr*, at 8 p. m. of the 9th in lat. 16° 56' S., long. 176° 05' E., gave a southeast wind of force 10 and an atmospheric pressure of 29.33 inches. It was apparent on this date that the storm was curving into southward, and a report from Suva showed a barometer depressed to 29.56 inches, wind ESE., force 6.

On the 10th Suva sent out a report of a pressure of 29.39 inches, wind SE. by E., force 7 to 8, rainy and squally weather. At 8 a. m. the steamship *Pinna*, anchored in Nandi Bay, outside Lautoka, Fiji, reported a barometer of 29.18, wind SSE., 8. The storm had now recurved into southeast and was headed directly upon the Fiji Group.

At noon of the 11th the hurricane center was slightly north of Suva, where the barometer read 29.22, with a fresh southeast gale, and was moving upon Savu Savu, where at 12:40 p. m. a hurricane wind from northeast was raging, with barometer at 28.48.

On the 12th the hurricane, after passing Suva to the eastward, slowly recurved from southeast into south over the Koro Sea. Fresh to strong shifting gales were yet blowing at Suva, but the winds were diminishing rapidly at Savu Savu. At least one important line of communication—the land line to Levuka—was reported interrupted.

At 8:30 p. m. of the 13th Suva reported the storm as well to the southward, now apparently heading south-southwest. The Danish motor ship *Jane Maersk*, in 23° S., 178° E., at 8 p. m., with a barometer of 29.33, rising, was experiencing a south wind of force 11, which attests to the violence of the cyclone at this time.

THREE TROPICAL CYCLONES OF THE SOUTH PACIFIC OCEAN, 1927-28

By WILLIS E. HURD

His Excellency the Governor of New Caledonia, at Noumea, in a recent communication to the Hydrographic Office, which was forwarded to the Weather Bureau, inclosed data relative to three tropical disturbances in the South Pacific Ocean which occurred during the period December, 1927, to May, 1928.

The earliest was experienced at the beginning as a fresh northeast gale, pressure 29.33 inches, at Port Vila, Elate Island, in the New Hebrides Group, on the afternoon of December 29. Fresh to strong north gales occurred during the early hours of the 30th, with barometer dropping to a minimum of 29.13. At 10 a. m. the wind went into northwest, force 10, with rising pressure, as the cyclone passed the island to the westward, and after 2 p. m. the force lessened. The storm, which was encountered with moderate severity by the steamships *Makambo* and *Cassiopec*, proceeded in a south-southeasterly direction across the Loyalty Group midway between the New Hebrides and New Caledonia, the center passing a short distance east of Noumea at 2 a. m. of the 31st. It crossed Walpole Island at 10 a. m. and continued on the southward of the Fijis during January 1.

The cyclone of February 8-9, 1928, was of considerable violence over some portions of the New Hebrides Group, in particular devastating the south end of Santo Island and the northern part of the close-lying island of Aore, where it badly damaged buildings and broke down or uprooted the palm trees. At Lunganville, on the south-east of Santo, the barometer dropped from 29.84, at 7 p. m., to 28.78 inches, at 9 p. m. of the 8th, the wind at both hours being from east-southeast. The cyclone approached from the eastward, the center crossing five islands of the group, then going in a southwesterly